

ASTEROSEISMOLOGY OF BRIGHT SOLAR-TYPE STARS

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A fundamental goal of modern stellar astrophysics is to accurately model stars of different masses and evolutionary stages. Our ability to test and improve stellar models, however, relies crucially on the independent information available to constrain the model parameter space. We propose to observe a small sample of the brightest solar-type stars in the Kepler field which, unlike most stars observed by Kepler, have strong constraints on their fundamental properties from complementary observational techniques such as astrometry, interferometry, and high-resolution spectroscopy. The key goal of the proposal is to use asteroseismology, the measurement of stellar oscillations, in combination with complementary observations to fundamentally test and advance models of stars. Oscillations will be measured using Kepler data, and complementary information will be extracted from the literature and dedicated ground-based follow-up observations. Observations will then be compared to state-of-the-art models using different input physics. The improved models will allow us to characterize fainter stars for which complementary information is unavailable, and hence aid complementary projects such as the characterization of exoplanet host stars or galaxy population studies.